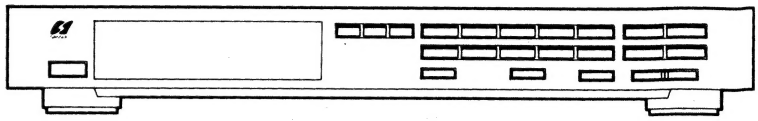
SANSUI

SERVICE MANUAL

TU-X301*i*
TU-X301*i*L

DIGITAL SYNTHESIZER TUNER



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety.
   Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

•SPECIFICATIONS

FM Section

Tuning range..... 87.5 to 108 MHz
Usable sensitivity
Mono IHF ..... 11.2 dBf
DIN ..... 2.0 μV
50 dB quieting sensitivity
Mono..... 18.0 dBf
Stereo ..... 38.0 dBf
Signal to noise ratio at 85 dBf
Mono..... 79 dB
Stereo ..... 73 dB
Distortion at 65 dBf
Mono..... less than 0.1% at 1,000 Hz
Stereo ..... less than 0.2% at 1,000 Hz
Alternate channel selectivity (at 400 kHz)
..... 75 dB
Image response ratio..... 45 dB
Spurious response ratio... 75 dB
Stereo separation ..... 40 dB at 1,000 Hz
Frequency response
Stereo ..... 30 to 15,000 Hz
+0.3 dB, —0.8 dB
Antenna input impedance 300 ohms balanced
75 ohms unbalanced

AM Section

Tuning range..... 530 to 1,600 kHz
Usable sensitivity (TU-X301i)
..... 50 dB/m
Signal to noise ratio..... 50 dB (85 dB/m)
Image response ratio..... 45 dB at 1,000 kHz

TU-X301iL

LW Section

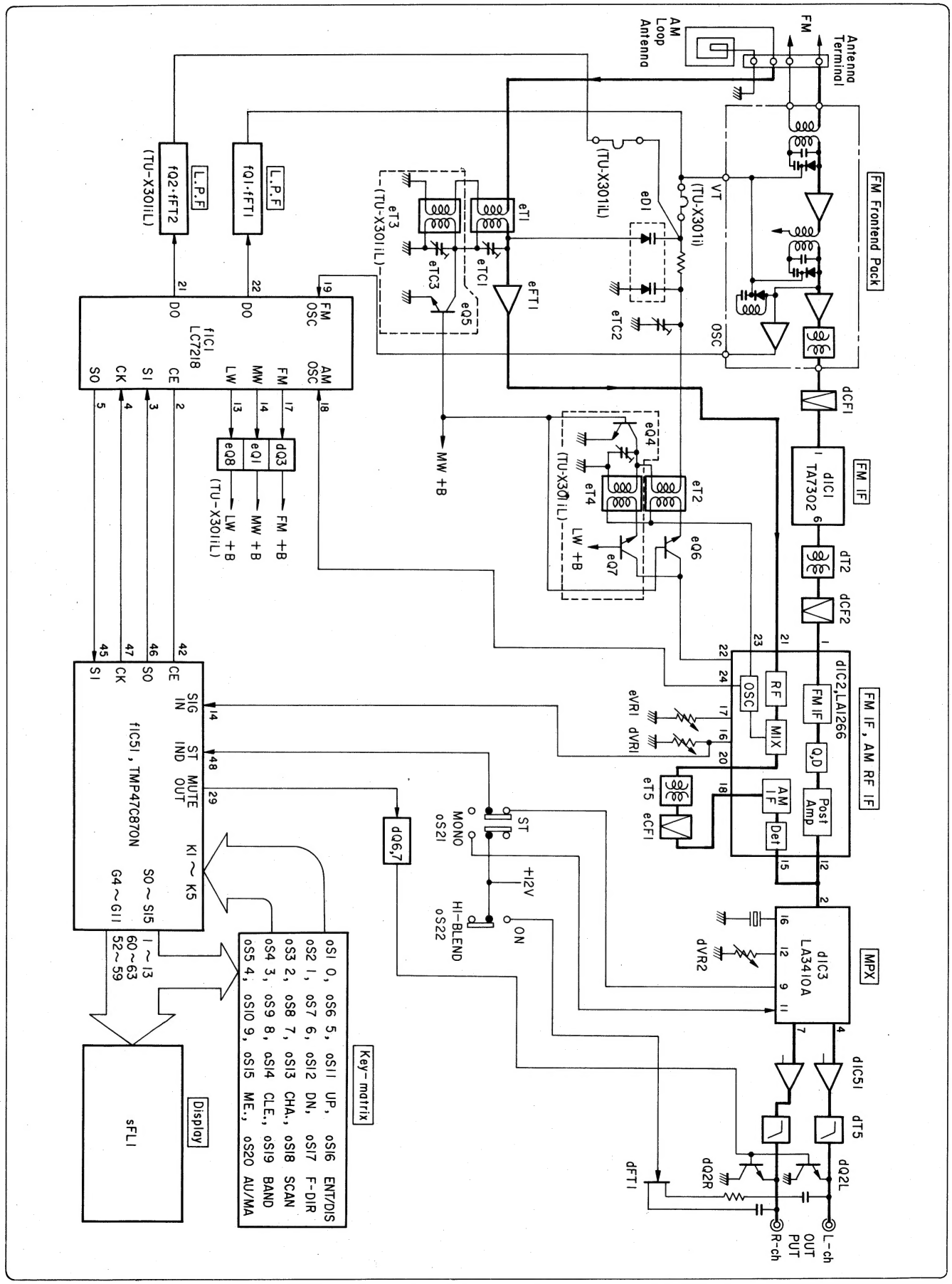
Tuning range..... 153 to 281 kHz
Usable sensitivity ..... 60 dB/m

Others

Output voltage and impedance
..... 775 mV/2.2 kohms
Power requirements..... 120/220/240V
50/60 Hz
For U.S.A. and Canada 120V (60 Hz)
Power consumption ..... 10 watts
Dimensions..... 430 mm (16-15/16″)W
60 mm (2-3/8″)H
257 mm (10-1/8″)D
Weight..... 2.8 kg (6.2 lbs) net
3.4 kg (7.5 lbs) packed

* Design and specifications subject to changes without notice for improvements.
* In order to simplify the explanation illustrations may sometimes differ from the originals.

1. BLOCK DIAGRAM

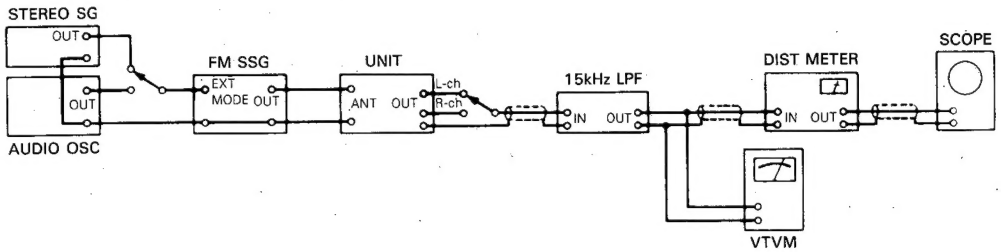


2. ADJUSTMENTS

2-1. FM Adjustment (See Adjustment points of F-6030 on Page 4)

Note: 1. BAND Switch ..... FM
2. FM MODE Switch ..... MONO
(Steps 1, 2, 3); AUTO (Step 4, 5)
3. FM NOISE CANCELER ..... OFF
4. Connect as shown Fig. 2-1.

Fig. 2-1



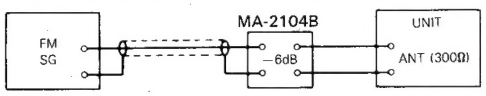
STEP	SUBJECT		FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Reference Frequency Adj.		No Input	——	Between Point Ⓐ (Pin 1 of fIC1) and GND (F-6030), Frequency Counter	fTC1 (F-6030)	7.200000MHz ±100Hz	
2.	Discriminator Coil Adj.	①	No Input	——	Between Point Ⓑ and Point Ⓒ, (Across the dR9, F-6030) DC Volt Meter	dT3 (F-6030)	DC 0V±10mV	•Repeat procedures as stated in subject ① & ②.
		②	98MHz ANT Input, 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	FM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	98.00MHz	
					Output L or R ch, Dist Meter	dT4 (F-6030)	Min. THD	
3.	Muting Level Adj.		98MHz ANT Input, 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	FM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	98.00MHz	
					Output L or R ch, VTVM & Oscilloscope	dVR1 (F-6030)	Output signal comes out.	
4.	Distortion Adj.		98MHz ANT Input, 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L—R MODE 1kHz+Pilot (100% MOD.), STEREO SG	FN ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	98.00MHz	
					Output L or R ch, Distortion Meter	dT2	Min. THD	
5.	Stereo Separation Adj.		98MHz ANT Input, 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz+Pilot (100% MOD.), STEREO SG	FM ANT Terminal	OUTPUT L ch, VTVM & Oscilloscope	——	Read the indication on VTVM	•Confirm R→L ch
					OUTPUT R ch, VTVM & Oscilloscope	dVR2 (F-6030)	—35dB from the indication above.	

◆NOTICE FOR FM ADJUSTMENT

There are two kind in indication of FM SSG output attenuator.
1. Attenuator with marking of 75Ω open ..... open indication type.
2. Attenuator with marking of 75Ω load or close ..... load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.
To feed FM signal, a dummy antenna circuit as Fig. 2-2 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 2-2



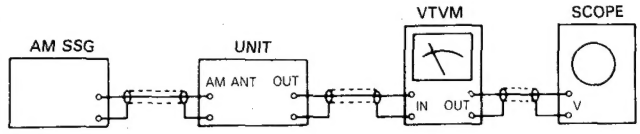
- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	—0.8 dBf 65.2 dBf	—6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

2-2. AM (MW, LW) Adjustment (See Fig. 2-4 Adjustment points of F-6030 on Page 4)

Note: 1. BAND Switch ..... AM (TU-X301i),
BAND Switch ..... MW (TU-X301iL)
2. Connect AM loop antenna to AM antenna terminal.
3. Connect as shown Fig. 2-3.

Fig. 2-3



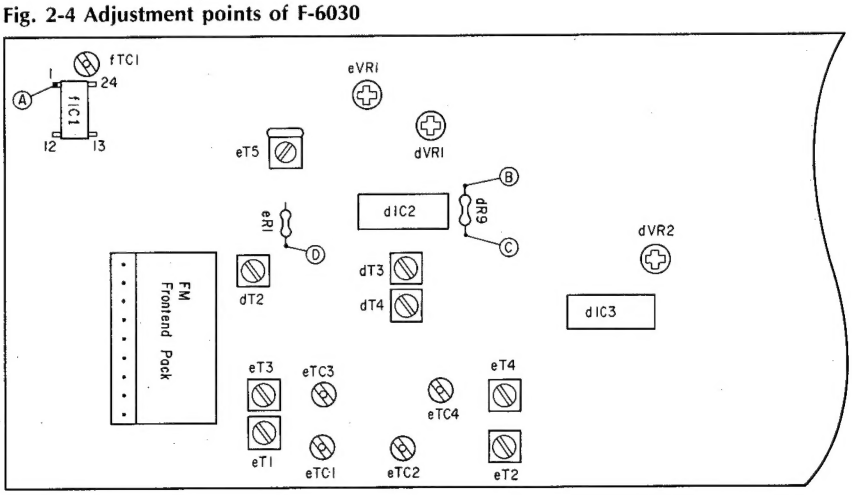
1) AM IF and MW (AM) Tuning Adjustment

STEP	SUBJECT	FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	531kHz (or 530kHz) Tuning Voltage Adj.	No Input	——	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	531kHz (or 530kHz)	•Repeat precedures as stated in STEP 1 and 2.
				Between Point Ⓓ (eR1, F-6030) and GND, DC Volt Meter	eT2 (F-6030)	DC 1.0V±0.1V	
2.	1602kHz (or 1710kHz) Tuning Voltage Adj.	No Input	——	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	1602kHz (or 1710kHz)	
				Between Point Ⓓ (eR1, F-6030) and GND, DC Volt Meter	eTC2 (F-6030)	8.0V±0.1V (1602kHz) 9.0V±0.1V (1710kHz)	
3.	603kHz (or 600kHz) RF Adj.	603kHz (or 600kHz) ANT Input, 30dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	603kHz (or 600kHz)	•Repeat precedures as stated in STEP 3 and 4.
				Output L or R ch, VTVM & Oscilloscope	eT1 (F-6030)	Max. Output	
4.	1404kHz (or 1400kHz) RF Adj.	1404kHz (or 1400kHz) ANT Input, 30dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	1404kHz (or 1400kHz)	
				Output L or R ch, VTVM & Oscilloscope	eTC1	Max. Output	
5.	IF Coil Adj.	999kHz (or 1000kHz) ANT Input, 30dB, 400Hz (30% MOD.), AM SSG	AM ANT Terminal	Output L or R ch, VTVM & Oscilloscope	eT5 (F-6030)	Max. Output	
6.	Signal Indicator Level Adj.	999kHz (or 1000kHz) ANT Input, 70dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	999kHz (or 1000kHz)	
				Signal Indicator (FL Display)	eVR1 (F-6030)	Make all signal indicators lighting up.	

2) LW Tuning Adjustment <TU-X301iL only>

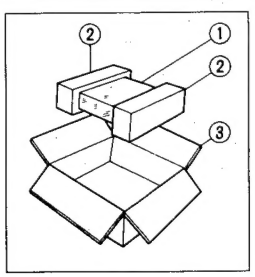
STEP	SUBJECT	FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	153kHz Tuning Adj.	No Input	——	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	153kHz	•Repeat precedures as stated in STEP 1 and 2.
				Between Point Ⓓ (eR1, F-6030) and GND, DC Volt Meter	eT4 (F-5740)	1.0V±0.1V	
2.	281kHz Tuning Adj.	No Input	——	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	281kHz	
				Between Point Ⓓ (eR1, F-6030) and GND, DC Volt Meter	eTC4 (F-5740)	5.4V±0.1V	
3.	170kHz RF Adj.	170kHz ANT Input, 30dB, 400Hz (30% MOD.), AM SSG	ANTENNA Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	170kHz	•Repeat precedures as stated in STEP 3 and 4.
				Output L or R ch, VTVM & Oscilloscope	eT3 (F-5740)	MAX. Output	
4.	261kHz RF Adj.	261kHz ANT Input, 30dB, 400Hz (30% MOD.), AM SSG	Same as above	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (∧, ∨) Switch	261kHz	
				Output L or R ch, VTVM & Oscilloscope	eTC3 (F-6030)	MAX. Output	

Fig. 2-4 Adjustment points of F-6030



3. PACKING LIST

Parts No.	Stock No.	Description
1	47859300	Vinyl Bag
2	27657200	Styrofoam Packing
3	27635600	Carton Case (TU-X301i)
	27643100	Carton Case (TU-X301iL)



4. ACCESSORY LIST

Stock No.	Description
46051700	FM ANTENNA
48835500	AM LOOP ANTENNA
07563000	AM ANTENNA HOLDER
38103200	Pin Plug Cord
or 46118600	Pin Plug Cord
or 48802200	Pin Plug Cord
49041200	Operating Instruction for TU-X301i/TU-X301iL (*E•F•S)
49041300	Operating Instruction for TU-X301i/TU-X301iL (*G•I•Sw)

***Note:**
E•F•S: **E**nglish•**F**rench and **S**panish Version
G•I•Sw: **G**erman•**I**talian and **Sw**edish Version

5. PARTS LIST OF BOARD

Note

1. The symbols, EU, EG, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

   EU..... Manufactured for European market. (Except F.R. Germany)
   EG..... Manufactured for F.R. Germany market.
   SS..... Manufactured for Saudi Arabia market.
   XX..... Standard Version. <EXPORT>
   NON MARK..... Common Parts.

2. Some printed circuit boards are not supplied assembled. To separate these in this parts list, the stock numbers are not indicated for these boards. However, stock numbers for individual parts are indicated.

3. Since some capacitors and resistors are omitted from parts lists in this parts list, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

4. Abbreviations in this parts list are as follows.

•Abbreviations List

C.R.	: Carbon Resistor
Ce.R.	: Cement Resistor
M.R.	: Metal Film Resistor
F.R.	: Fusing Resistor
N.I.R.	: Non-Inflammable Resistor
A.R.	: Array Resistor
C.C.	: Ceramic Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation
E.C.	: Electrolytic Capacitor
E.L.	: Low Leak Electrolytic Capacitor
E.B.	: Bi-Polar Electrolytic Capacitor
E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
Ta.C.	: Tantalum Capacitor
F.C.	: Film Capacitor
M.P.	: Metalized Paper Capacitor
P.C.	: Polystyrene Capacitor
M.M.C.	: Metalized Mylar Capacitor
A.C.	: Array Capacitor
V.R.	: Variable Resistor
S.V.R.	: Semi Variable Resistor
SW.	: Switch

5-1. F-6030 Main Board <Stock No. 01129701 = TU-X301i/Stock No. 01130005 = TU-X301iL>

Parts No.	Stock No.	Description
dZ1	48729600	FM Frontend Pack
•Transistor		
dQ1	48223100	DTC114TS
dQ2	46540801	2SC2878
	or 46604301	2SC3327
dQ3	48183400	DTA114YS
dQ4	48183400	DTA114YS
dQ5	48183400	DTA114YS
dQ6	48171600	DTC114YS
dQ7	48183400	DTA114YS
dQ8	48171600	DTC114YS
dQ9	48171600	DTC114YS
•FET		
dFT1	46643501	2SK163-K2
	or 46643502	2SK163-L1
	or 46643601	2SK117-Y
	or 46643602	2SK117-GR
•IC		
dIC1	03605900	TA7302P
dIC2	48715100	LA1266
dIC3	48491000	LA3410A
dIC51	46147700	M5218L
dXO1	48272800	Ceramic OSC Element CSB456
•Diode		
dD1 ~ 12	03117600	1S2473T77
dD13	46464100	1SS133
dD14	46464100	1SS133
⚠dR15	46228600	47Ω 1/2W N.I.R.
dC4	48426900	22000pF 25V C.C.
dC5	48426900	22000pF 25V C.C.
dC6	48426900	22000pF 25V C.C.
dC7	48426900	22000pF 25V C.C.
dC8	48426900	22000pF 25V C.C.
dC19	48659800	33pF 50V C.C.
dC23	48426900	22000pF 25V C.C.
dC35	49198800	1000pF 50V F.C.
dC36	49199000	470pF 50V F.C. (TU-X301i)
dC39	49201200	3900pF 50V F.C.
dC41	48088200	0.082μF 50V F.C.
dC42	48088200	0.082μF 50V F.C.
dC43	48103400	1μF 50V E.B.

Parts No.	Stock No.	Description
dCF1	46202500	Ceramic Filter. SEF10.7MS2 RED (TU-X301i)
	48064800	Ceramic Filter SFE10.7MS3G RED (TU-X301iL)
dCF2	46202500	Ceramic Filter SEF10.7MS2 RED (TU-X301i)
	48064800	Ceramic Filter SFE10.7MS3G RED (TU-X301iL)
dT5	46894900	Low Pass Filter TF-10
dL2	48070700	Inductor
dL3	48070700	Inductor
dL4	48070700	Inductor
dT1	49324300	FM VHF Balun
dT2	46369500	FM IF Coil
dT3	48718700	FM IF Coil
dT4	48718600	FM IF Coil
dVR1	46634700	47kΩ S.V.R., FM LOCKED
dVR2	46634900	100kΩ S.V.R., VCO
•Transistor		
eQ1	48183400	DTA114YS
eQ2	48171600	DTC114YS
eQ3	48171600	DTC114YS
eQ4	46540801	2SC2878
	or 46604301	2SC3327
eQ5	46540801	2SC2878 (TU-X301iL)
	or 46604301	2SC3327 (TU-X301iL)
eQ6	48223100	DTC114TS
eQ7	48223100	DTC114TS
eQ8	48183400	DTA114YS
eQ9	48171600	DTC114YS
•FET		
eFT1	46393000	2SK192A-Y
	or 46393001	2SK192A-GR
eD1	46708400	Variable Capacitance, Diode SVC321
•Diode		
eD2	03117600	1S2473T77
eD3	03117600	1S2473T77
eD4	03117600	1S2473T77 (TU-X301iL)
eD5	03117600	1S2473T77 (TU-X301iL)
eD11	46708400	Variable Capacitance, Diode SVC321

<F-6030>

Parts No.	Stock No.	Description
eTC1	46095700	Trimmer Capacitor 30pF
	or 46162900	Trimmer Capacitor 30pF
eTC2	46095700	Trimmer Capacitor 30pF
	or 46162900	Trimmer Capacitor 30pF
eTC3	46095700	Trimmer Capacitor 30pF (TU-X301iL)
	or 46162900	Trimmer Capacitor 30pF (TU-X301iL)
eTC4	46095700	Trimmer Capacitor 30pF (TU-X301iL)
	or 46162900	Trimmer Capacitor 30pF (TU-X301iL)
eCF1	48069900	Ceramic Filter CFM2-450BL
eL1	46091910	Inductor 39mH
eT1	46394600	AM ANT Coil
eT2	48568800	AM OSC Coil
eT3	48577500	LW ANT Coil (TU-X301iL)
eT4	48074410	LW OSC Coil (TU-X301iL)
eT5	49323800	AM IF Coil
eVR1	46634400	15kΩ S.V.R., Sig. Ind. Level
•Transistor		
fQ1	46367101	2SC2603
	or 48058801	2SC1740S
fQ2	46367101	2SC2603 (TU-X301iL)
	or 48058801	2SC1740S (TU-X301iL)
fQ3	48223100	DTC114TS
fQ4	48171600	DTC114YS
fQ5	46834300	DTC144ES
•FET		
fFT1	46643501	2SK163-K2
	or 46643502	2SK163-L1
	or 46643601	2SK117-Y
	or 46643602	2SK117-GR
fFT2	46643501	2SK163-K2 (TU-X301iL)
	or 46643502	2SK163-L1 (TU-X301iL)
	or 46643601	2SK117-Y (TU-X301iL)
	or 46643602	2SK117-GR (TU-X301iL)
•IC		
fIC1	49317500	LC7218
fXO1	07237700	Quartz Crystal NR-18
•Diode		
fD1	03117600	1S2473T77
fD2	46464100	1SS133
fC1	49199800	1000pF 50V F.C.
fC6	49199800	1000pF 50V F.C. (TU-X301iL)
fC7	48103400	1μF 50V E.B. (TU-X301iL)
fC9	48426900	22000pF 25V C.C.
fC11	48426900	22000pF 25V C.C.
fC14	48717800	4.7μF 5.5V E.C.
fTC1	46095700	Trimmer Capacitor 30pF
	or 46162900	Trimmer Capacitor 30pF
fL1	48070700	Inductor
fL2	48070700	Inductor
fL3	48070700	Inductor
•Transistor		
⚠mQ1	03083901	2SD313HP
	or 46546701	2SD880
mQ2	46367101	2SC2603
	or 48058801	2SC1740S
mQ3	46367101	2SC2603
	or 48058801	2SC1740S
⚠mQ4	46367001	2SA1115
	or 48058601	2SA933S
mQ5	48229400	DTA114TS
•FET		
mFT1	46643501	2SK163-K2
	or 46643502	2SK163-L1
	or 46643601	2SK117-Y
	or 46643602	2SK117-GR

Parts No.	Stock No.	Description
•IC		
mIC1	46361200	L78N06
	or 48599600	AN78N06
•Diode		
⚠mD1 ~ 8	03117700	10E-2
mD9	03117600	1S2473T77
mD10	03117600	1S2473T77
mD11	03117600	1S2473T77
•Zener Diode		
mDZ1	49303200	05AZ6.2-X
	or 49303300	05AZ6.2-Y
mDZ2	49308100	05AZ27-X
	or 49308200	05AZ27-Y
mDZ3	49303200	05AZ6.2-X
	or 49303300	05AZ6.2-Y
mDZ4	49306300	05AZ16-X
	or 49306400	05AZ16-Y
mDZ5	49306400	05AZ16-Y
	or 49306500	05AZ16-Z
mR1	46909200	150Ω 3W N.I.R.
mC4	49247300	220pF 50V F.C.
oS25	48832900	Push SW., RESET
oZ2	48148500	2P Terminal, OUTPUT
oZ1	46547300	4P Terminal, ANTENNA

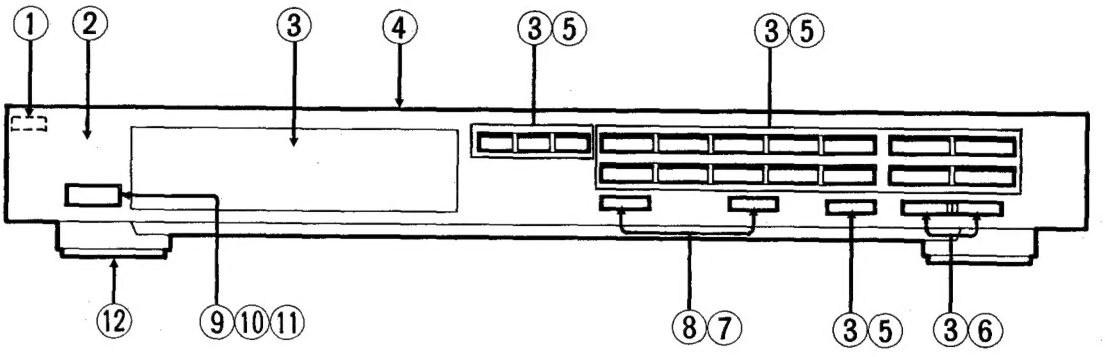
5-2. F-6031 Operational Switch & FL Display Board

<Stock No. 01129801 = TU-X301i/Stock No. 01130105 = TU-X301iL>

Parts No.	Stock No.	Description
•Transistor		
fQ51	48171600	DTC114YS
fQ52	48171600	DTC114YS
fQ53	48223100	DTC114TS
fQ54	48223100	DTC114TS
•IC		
fIC51	49317400	TMP47C870N
fXO51	49334900	Quartz Element
•Diode		
fD51 ~ 60	46464100	1SS133
fD61 ~ 63	46464100	1SS133 (TU-X301iL)
fD161	46464100	1SS133 (TU-X301i)
fD162	46464100	1SS133 (TU-X301i)
fC51	48426900	22000pF 25V C.C.
oS1	49344900	Push SW., Preset "0"
oS2	49344900	Push SW., Preset "1"
oS3	49344900	Push SW., Preset "2"
oS4	49344900	Push SW., Preset "3"
oS5	49344900	Push SW., Preset "4"
oS6	49344900	Push SW., Preset "5"
oS7	49344900	Push SW., Preset "6"
oS8	49344900	Push SW., Preset "7"
oS9	49344900	Push SW., Preset "8"
oS10	49344900	Push SW., Preset "9"
oS11	48240500	Tact SW., TUNING ∧
oS12	49344900	Push SW., TUNING ∨
oS13	49344900	Push SW., CHARACTER
oS14	49344900	Push SW., CLEAR
oS15	49344900	Push SW., MEMORY
oS16	49344900	Push SW., ENTER/DISPLAY
oS17	49344900	Push SW., F-DIRECT
oS18	49344900	Push SW., P-SCAN
oS19	49344900	Push SW., BAND
oS20	49344900	Push SW., AUTO/MANUAL
oS21	46500000	Push SW., FM MODE
oS22	46500000	Push SW., FM NOISE CANCELER
sFL1	49317100	FL. Display Tube CP3023GR

6. OTHER PARTS (* Refer to the "Note" on page 5 about the symbols, EU, EG, SS and XX)

6-1. Front View

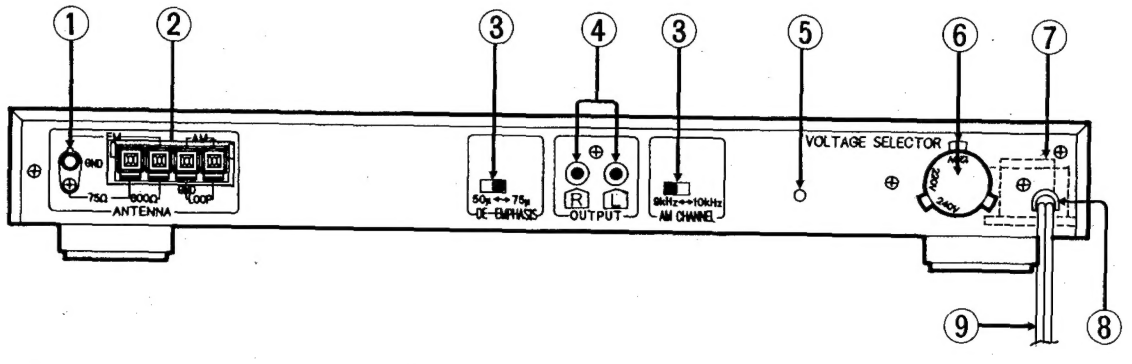


Parts List <Front View>

Parts No.	Stock No.	Description
1	27392400	Earth Plate
2	27635300	Front Panel Ass'y-A
3	27650500	Front Panel Ass'y-B for TU-X301i (XX•SS)
	27635400	Front Panel Ass'y-B for TU-X301i (EU•EG)
	27639600	Front Panel Ass'y-B for TU-X301iL
4	27632200	Bonnet
5	49344900	Push SW., CHARACTOR•CLEAR•F-DIRECT•0~9•MEMORY•BAND•ENTER/DISPLAY•P.SCAN•AUTO/MANUAL
6	48240500	Tact SW., TUNING
7	27627700	Knob, FM MODE•FM NOISE CANCELER
8	46500000	Push SW., FM NOISE CANCELER•FM MODE
9	27626500	Knob, POWER
⚠ 10	46364300	Push SW., POWER
⚠ 11	46943200	0.01μF 400V C.C.
12	27273510	Leg

Notice: Knobs are each portion of front panel ass'y-B except POWER, FM MODE and FM NOISE CHANCELER.

6-2. Rear View



Parts List <Rear View>

Parts No.	Stock No.	Description
1	22301510	Ground Terminal
2	46547300	4P Terminal, ANTENNA
3	46533500	Slide SW., DE-EMPHASIS•AM CHANNEL for TU-X301i (XX•SS)
4	48148500	2P Terminal, OUTPUT
5	48832900	Push SW., RESET
⚠ 6	48175200	Plug, Voltage Selector for TU-X301i (XX•SS)
⚠	07204700	Slide SW., Voltage Selector for TU-X301iL
⚠ 7	15033009	Power Transformer for TU-X301i (XX•SS)
⚠	15033005	Power Transformer for TU-X301i (EU•EG)
⚠	15033105	Power Transformer for TU-X301iL
8	39106000	Strain Relief for TU-X301i (XX)
	48913500	Strain Relief for TU-X301i (SS)
	48913500	Strain Relief for TU-X301i (EU•EG)
	48913500	Strain Relief for TU-X301iL
⚠ 9	38004700	Power Supply Cord for TU-X301i (XX)
⚠	48837700	Power Supply Cord for TU-X301i (SS)
⚠	49299300	Power Supply Cord for TU-X301i (EU•EG)
⚠	38004500	Power Supply Cord for TU-X301iL

7. HOW TO REMOVE FRONT PANEL ASS'Y-A & B

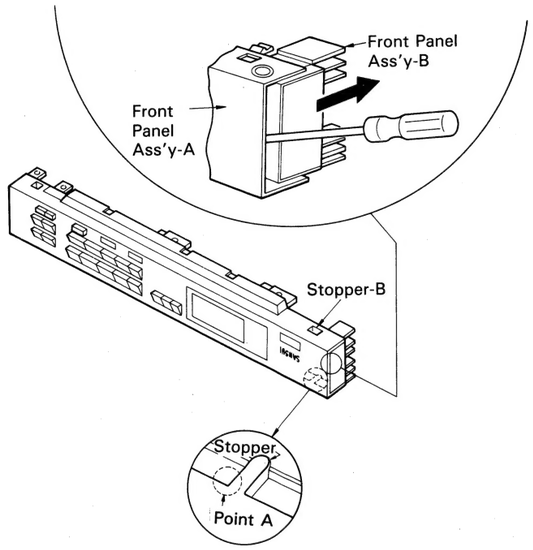
1) Remove the bonnet.
2) To remove front panel ass'y-A & B from unit, loosen five screws.
3) To remove the F-6030 board, unhook fifteen them.

Note: Don't break stoppers.

4) If it is applied bond to point Ⓐ as figure, cut a joint portion of the bond.
5) Put the bottom side of front panel ass'y-A upward, insert the flat-type driver while pushing the stopper-B.

Note: Don't break stoppers.

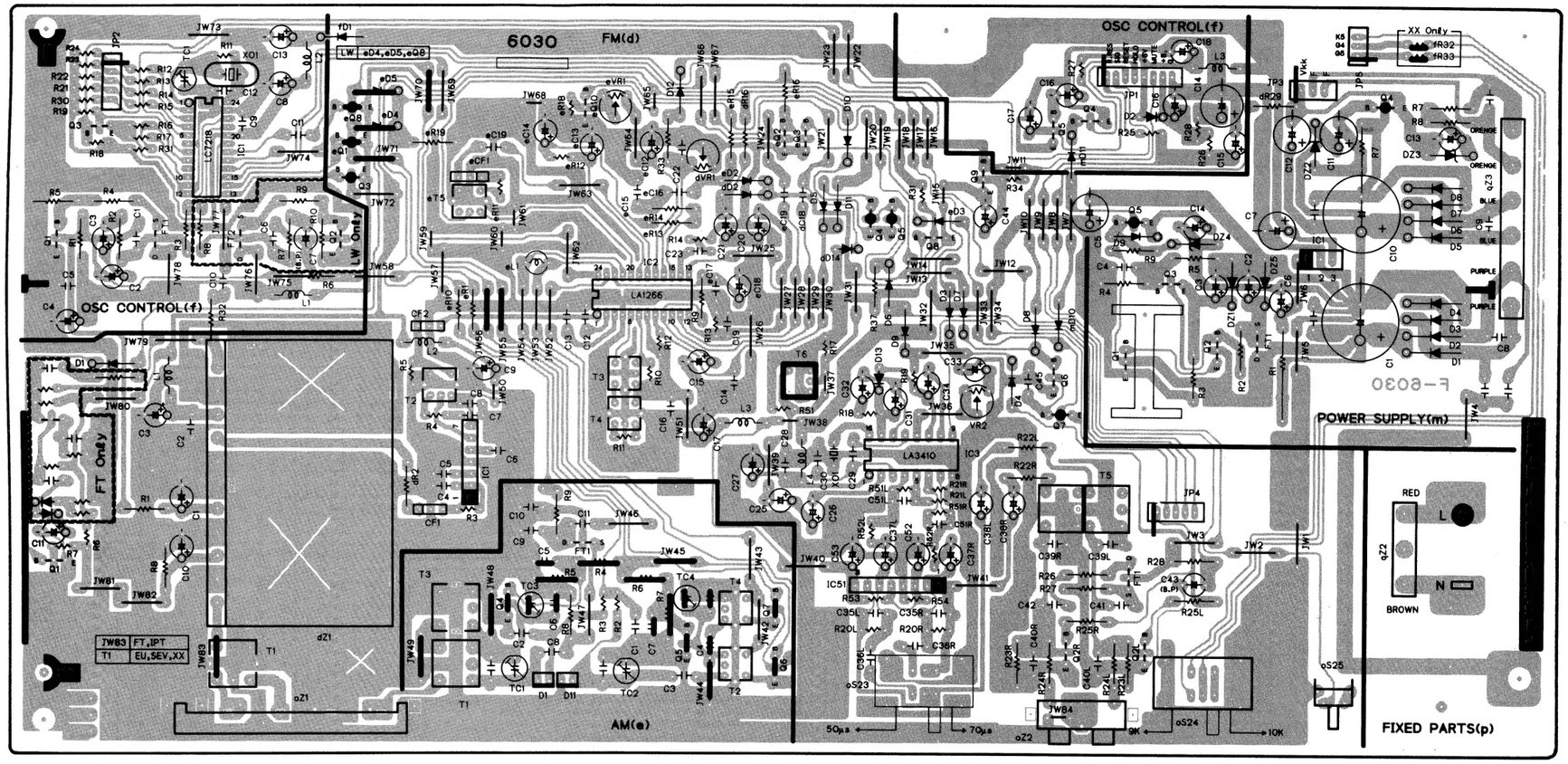
6) To separat the panel ass'y-A and B, unhook eleven them in all while pushing the front panel ass'y-B to the arrow direction as figure.



8. PARTS LOCATION ON BOARD

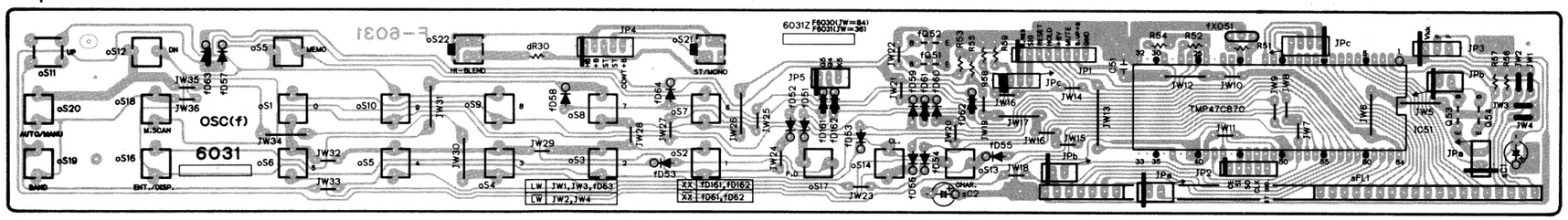
8-1. F-6030 Main Board

Component Side



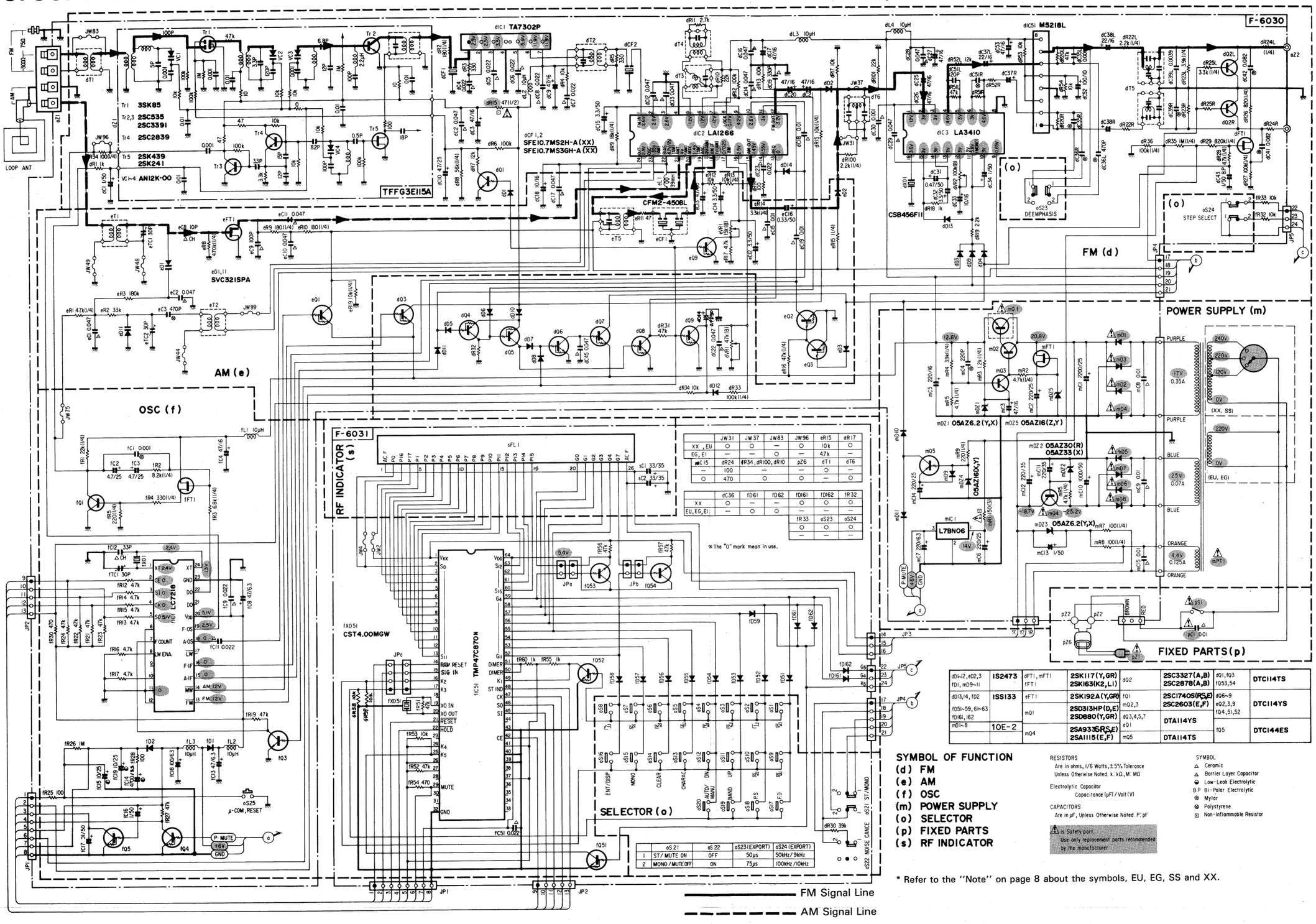
8-2. F-6031 Operational Switch & FL Display Board

Component Side



9. SCHEMATIC DIAGRAM 9-1. TU-X301i

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



	JW31	JW37	JW83	JW96	eR15	dR17
XX, EU	○	○	—	○	10k	○
EG, EI	—	—	○	○	47k	—
mC15	dR24	dR34, dR100, dR10		pZ6	dT1	dT6
—	100	—		—	○	—
○	470	○		○	—	○

	dC36	fD61	fD62	fDI61	fDI62	fR32
XX	○	—	—	○	○	○
EU, EG, EI	—	○	○	—	—	—
				fR33	oS23	oS24
				○	○	○
				—	—	—

*The "○" mark mean in use.

	oS21	oS22	oS23 (EXPORT)	oS24 (EXPORT)
1	ST/MUTE ON	OFF	50μs	50kHz/9kHz
2	MONO/MUTE OFF	ON	75μs	100kHz/10kHz

dD1~12, eD2, 3 fD1, mD9~11	1S2473	dFT1, mFT1 fFT1	2SK117(Y,GR) 2SK163(K2,L1)	dQ2	2SC3327(A,B) 2SC2878(A,B)	dQ1, fQ3 fQ53,54	DTC114TS
dD13, 14, fD2 fD51~59, 61~63 fDI61, I62	1SS133	eFT1	2SK192A(Y,GR)	fQ1	2SC1740S(R,S) 2SC2603(E,F)	dQ6~9 eQ2, 3, 9 fQ4, 51, 52	DTC114YS
mD1~8	10E-2	mQ1	2SD313HP(D,E) 2SD880(Y,GR)	mQ2, 3	DTA114YS		
		mQ4	2SA933SRS,E) 2SA1115(E,F)	mQ5	DTA114TS	fQ5	DTC144ES

SYMBOL OF FUNCTION
(d) FM
(e) AM
(f) OSC
(m) POWER SUPPLY
(o) SELECTOR
(p) FIXED PARTS
(s) RF INDICATOR

RESISTORS
Are in ohms, 1/6 Watts, ±5% Tolerance
Unless Otherwise Noted. k: kΩ, M: MΩ

Electrolytic Capacitor
Capacitance (μF) / Volt (V)

CAPACITORS
Are in μF, Unless Otherwise Noted. P: pF

⚠ is Safety part.
Use only replacement parts recommended by the manufacturer.

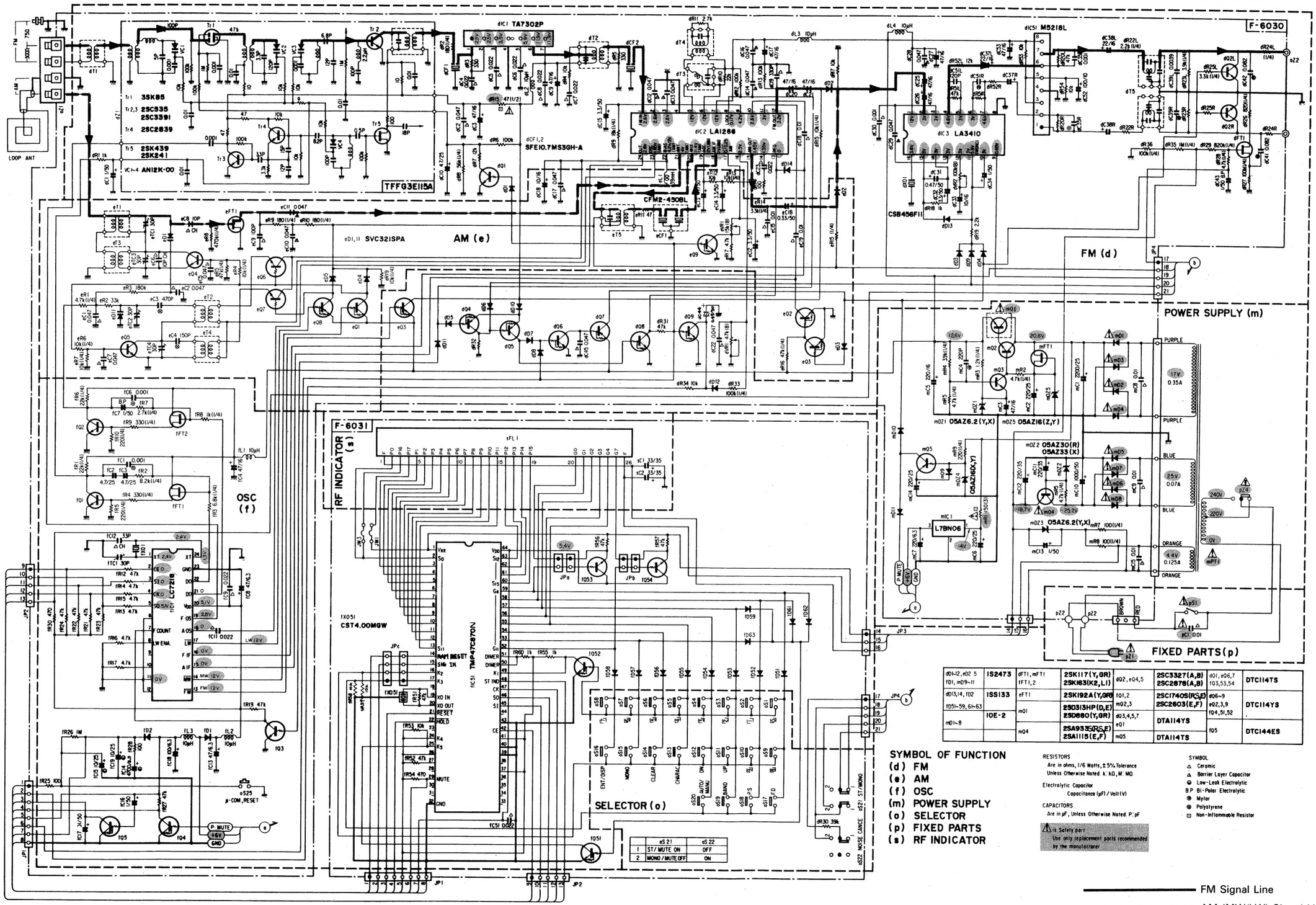
SYMBOL
△ Ceramic
△ Barrier Layer Capacitor
◒ Low-Leak Electrolytic
B.P. Bi-Polar Electrolytic
◎ Mylar
⊗ Polystyrene
⊡ Non-Inflammable Resistor

* Refer to the "Note" on page 8 about the symbols, EU, EG, SS and XX.

A	B	C	D	E	F	G	H

9-2. TU-X301iL

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



dD1~12, eD2 5 fD1, mD9~11	IS2473	dFT1, mFT1 fFT1,2	2SK117(Y,GR) 2SK163(K2,L1)	dQ2, eQ4,5	2SC3327(A,B) 2SC2878(A,B)	dQ1, eQ6,7 fQ3,53,54	DTC114TS
dD13,14, fD2	ISS133	eFT1	2SK192A(Y,GR)	fQ1,2	2SC1740S(R,S,E)	dQ6~9 eQ2,3,9 fQ4,51,52	DTC114YS
fD51~59, 61~63	1OE-2	mQ1	2SD313HP(D,E) 2SD880(Y,GR)	mQ2,3 eQ1	2SC2603(E,F) DTA114YS		
mD1~8		mQ4	2SA933S(R,S,E) 2SA1115(E,F)	mQ5	DTA114TS	fQ5	DTC144ES

SYMBOL OF FUNCTION
(d) FM
(e) AM
(f) OSC
(m) POWER SUPPLY
(o) SELECTOR
(p) FIXED PARTS
(s) RF INDICATOR

RESISTORS
Are in ohms, 1/6 Watts, ±5% Tolerance
Unless Otherwise Noted. k: kΩ, M: MΩ

Electrolytic Capacitor
Capacitance (μF) / Volt (V)

CAPACITORS
Are in μF, Unless Otherwise Noted. P: pF

⚠ is Safety part
Use only replacement parts recommended by the manufacturer

SYMBOL
△ Ceramic
▲ Barrier Layer Capacitor
⊖ Low-Leak Electrolytic
BP Bi-Polar Electrolytic
⊛ Mylar
⊗ Polystyrene
⊡ Non-Inflammable Resistor

	sS21	sS22
1	ST/MUTE ON	OFF
2	MONO/MUTE OFF	ON

FM Signal Line
AM (MW/LW) Signal Line

2SC2878 2SD313 2SD880
2SA933S 2SA1115 2SC1740S 2SC2603
2SC3327 DTA114TS DTA114YS DTC114TS DTC114YS DTC144ES
2SK192A
2SK117 2SK163
TA732P
M5218L
LA1266 LA3410A LC7218 TMP47C870N
Dot or Slit or Line
AN78N06 L78N06
1S2473 10E2
1SS133
05AZ6.2 05AZ16 05AZ27

10. INTERIOR BLOCK DIAGRAM & TERMINAL FUNCTION OF ICs

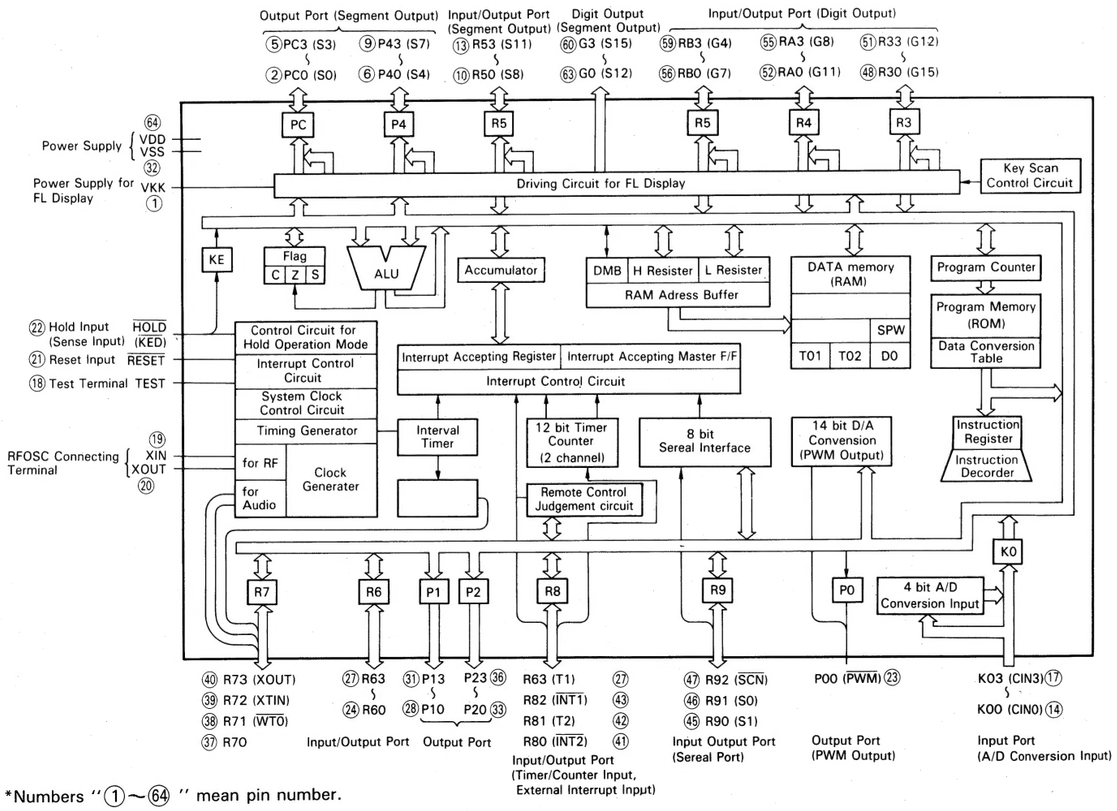
TMP47C870N (DTS/Audio Controller)

◆ Terminal Function

Pin No.	Pin Name	FUNCTION	OUTPUT L	OUTPUT H
52~59 60~63 2~13	G0~G7 S15~S1 S0~S11	Terminal for outputting segment signals to FL display tube.		
64	Vdd	Terminal for applying a device supply voltage. In the normal operation, a voltage of 5V±10% is applied.	—	—
1	Vkk	Terminal for connecting a supply voltage (—) to filament of FL display tube.		
14	SIG IN	Terminal for inputting a signal level.		
15	K1	Terminal for voltage to back up.	RAM CLEAR <1.25	RAM KEEP >1.25
49, 16~17 24~25	K2, K3 K4, K5	Terminal for inputting a key-matrix signal.	○ ○	>0.9V
19~20	XINOUT	Terminal for connecting a quartz oscllator of 4.0 MHz.		

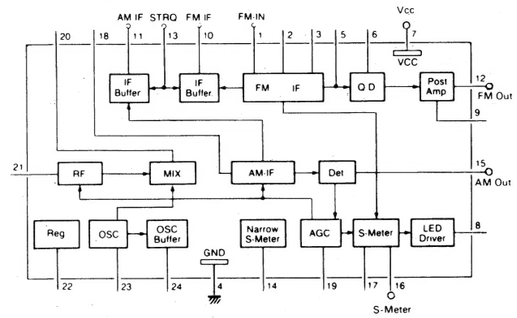
Pin No.	Pin Name	FUNCTION	OUTPUT L	OUTPUT H
21	RESET	Terminal for inputting a reset signal.	○	
22	HOLD	Terminal for inputting a signal to back up.	Back up	Run
29	Mute	Terminal for outputting a mute signal.	Normal	Mute on
32	GND	Ground Terminal.		
42	CE	Terminal for outputting a device select signal.		○
45 46	S IN S OUT	Terminal for serial interfaces.		○ ○
47	CLK OUT	Terminal for outputting a referrence frequency signal supplied to LC7218 PLL IC.		○
48	ST IND	Terminal for inputting a select signal of stereo IND.	FL ON	FL OFF

*"○" marks mean active level.

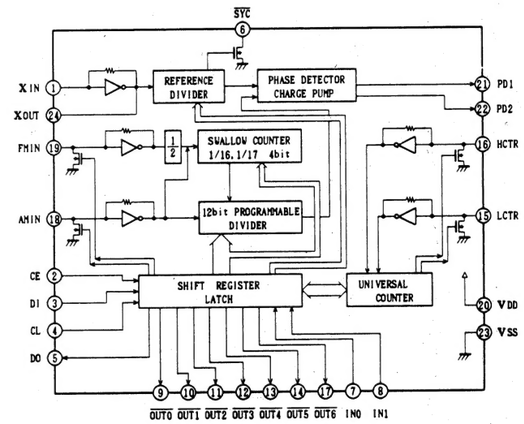


*Numbers "①~⑥④" mean pin number.

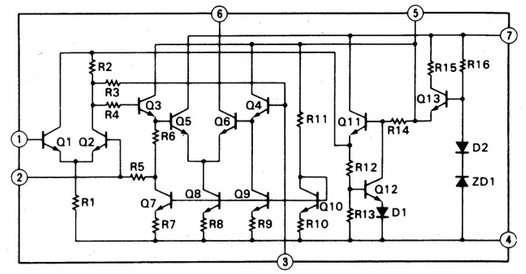
•LA1266 (FM-IF, AM-RF•MIX•IF)



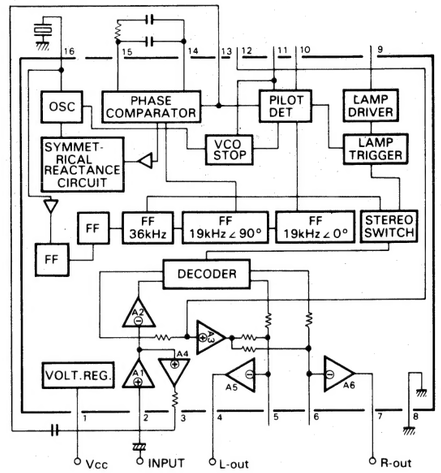
•LC7218 (PLL SYNTHESIZER)



•TA7302P (FM IF Amp.)



•LA3410A (MPX)



◆ Terminal Function of LC7218

PIN NO.	FUNCTION	L level	H level	PIN NO.	FUNCTION	L level	H level
7	SOTP	SCAN	STOP	11	VCR	OTHERS	VCR
8	LW ENABLE	MW ONLY	LW/MW	12	GEQ	OFF	ON
9	TUNING	MANUAL	AUTO	13	FM	FM	OTHERS
10	TAPE 2	SOURCE	MONITOR	14	MW	MW	OTHERS

XIN, XOUT : X'tal OSC (7.2 MHz)
FMIN, AMIN : OSC INPUT
CE, CL, D1, D0 : Serial Data Input
$\overline{OUT0}$~$\overline{OUT6}$: Output Port
IN0, IN1 : Input Port

HCTR, LCTR : Counter Input
PD1, PD2 : Carge Pump Output
$\overline{SYC}$: Clock for Controller (400 kHz)

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